

DUAL GMR READ HEAD WITH SELF-PINNED LAYER AND SPECULAR REFLECTOR

ABSTRACT OF THE DISCLOSURE

5 A dual GMR or dual spin valve sensor has a self-pinned layer which has its magnetic moment pinned perpendicular to an air bearing surface by sense current fields from conductive layers in the dual spin valve sensor when a sense current is conducted therethrough. This scheme eliminates one of the antiferromagnetic pinning layers which is typically employed in a dual GMR or dual spin valve sensor. The self-pinned layer is thin so that its demagnetization field will not be greater than the sense current fields acting thereon. Because of the thinning of the self-pinned layer the spin valve effect of 10 the spin valve sensor is degraded by scattering of conduction electrons at the boundary of the self-pinned layer. In order to overcome this problem a specular reflector layer is employed in contact with the self-pinned layer for reflecting the conduction electrons back into a mean free path of conduction electrons so that the spin valve effect on the self-pinned layer side of the spin valve sensor can be added to another spin valve effect 15 on the other side of the free layer structure for providing a double spin valve effect with an improved read gap, as compared to prior art dual spin valve sensors.